



“CLINICAL EFFICACY OF NIRGUNDIPATRA PINDASWEDA, YOGABASTI AND PANCHATIKTAGHRITA GUGGUL IN THE MANAGEMENT OF SANDHIGATA VATA (OSTEOARTHRITIS) – A CASE SERIES.”

Dr. Nikita Nigal

Assistant Professor, Kayachikitsa, CMCAH, Roorkee, Uttarakhand, India

ABSTRACT

Introduction: Osteoarthritis is degenerative Rhumatological disorder seen in old age and mostly affects knee joint. It is second most common disease with 22-39% prevalence. *Sandhigata vata* can be correlated with osteoarthritis (OA), which is characterized by joint inflammation, stiffness, discomfort, and loss of mobility. **Main clinical finding:** This study was done on four patients having symptoms of *Janusandhishoola*, *Janusandhishotha*, and *Chankramankashthata* and above 50 yrs. of age. **Diagnosis:** Patients diagnosed with *Sandhigata vata* according to the signs and symptoms. **Intervention:** Treatment administered was *Nirgundipatra pindasweda*, *Yogabasti*, *Panchatiktaghrita guggul*, *Dashmoolaristha*, *Triphala chooran* and *Agnitundi vati* for 15 days. Outcome - After completion of the 15 days course, there were noticeable improvements in pain, stiffness, inflammation, and mobility. **Conclusion:** It serves as an effective approach for managing *Sandhigata Vata*.

KEYWORDS: *Sandhigata Vata*, *Panchatiktaghrita guggul*, Osteoarthritis, *Nirgundipatra pindasweda*, *Yogabasti*

INTRODUCTION

Osteoarthritis is a prevalent degenerative joint disorder with bone hypertrophy that primarily affects weight bearing joints like the knee¹ Risk factor includes genetics, aging, obesity, trauma and higher incidence in women.^{2,3} Common symptoms include swelling, stiffness and functional impairment. According to contemporary science, treatment is either conservative or surgical; offering temporary relief and it's expensive.

Acharya Charaka described symptoms as *Vatapurnadruti Sparsha*, *Prasarana Akunchana Apravritti*, in which Acharya Sushruta and Madhava added Hanti and *Atopa* symptoms.^{4,5,6} *Vata - Kapha dosha* dominance and *Asthi*, *Sandhi*, *Mansa* and *Snayu dhatus* dushti seen. Diverse treatment regimens describe in *Samhitas*, which pacifies *Vata dosha* and alleviate symptoms and restore balance of affected joints, tissues.⁷

In this case series, *Nirgundipatra pindasweda*, *Yogabasti*, *Panchatiktaghrita guggul* and other *Shamana Aushadhi* was administered over 15 days, resulting in significant symptomatic relief. This protocol offers promising, affordable and holistic alternative for managing *Sandhigata Vata*.

Patient information:

In this case series patients who visited the *Kayachikitsa* outpatient department of our institute hospital, having complaint of *Janusandhishoola* (knee joint pain), *Chankramankashthata* (difficulty in walking) and *Janusandhishotha* (knee joint swelling) were selected. The patients provided informed consent and agreed to have their information used for publication. Demographic data collected including age, gender, occupation, cause and duration. All data described in Table 1.

Criteria	Case 1	Case 2	Case 3	Case 4
Age (in years)	63 years	56 years	68 years	52 years
Sex	Female	Female	Female	Female
Occupation	Worker	Worker	Housewife	Worker
Side of knee joint affected	<i>Dakshin</i> (right)	<i>Vama</i> (left)	<i>Vama</i> (left)	<i>Vama</i> (left)
Duration of symptoms	2 years	1.5 years	3-4 years	6 months

Table 1: Demographic data of all patients

Clinical findings

Case 1:

Chief complaints: A 63 years old female patient came with complaint of *Dakshin Janusandhishoola* (right knee joint pain), *Dakshin Janusandhishotha* (right knee joint inflammation) and *Chankramankashthata* (difficulty in walking) since 2 yrs.

History: Patient was known case of Hypertension since last 5-6 yrs and under regular treatment. Previously there was no history of trauma to knee joint. **Clinical findings:** revealed *Agni* (Digestive fire) was *Manda* and *Jivha* was *Sama*. Local examination suggests pain, swelling, crepitus, tenderness, increased local temperature of knee joint and difficulty in walking. It's grading is mentioned in table no. 3.

Case 2:

Chief complaints: A 56 years old female patient came with complaint of *Vama Janusandhishoola* (left knee joint pain), *Vama Janusandhishotha* (left knee joint inflammation) and *Chankramankashthata* since 11/2yrs. **History:** no history of any major disease and trauma to knee joint. **Clinical findings:** revealed *Agni* was *Manda* and *Jivha* was *Sama*. *Malavsthambha* (constipation) and *Udarguruta* (heaviness in abdomen) was

seen in this patient. Local examination suggests pain, swelling, crepitus, tenderness, increased local temperature of knee joint and difficulty in walking. It's grading is mentioned in table no. 3.

Case 3:

Chief complaints: A 68 years old female patient came with complaint of *Vama Janusandhishoola*, *Vama Janusandhishotha* and *Chankramankashthata*, *Vama Janu Prasarana Akunchana Apravritti* (Difficulty in movement of knee joint) since 3-4 yrs.

History: Patient was known case of Hypertension since last 7-8 yrs and under regular treatment. Previously there was no history of trauma to knee joint. **Clinical findings:** revealed *Agni* was *Manda* and *Jivha* was *Sama*. *Malavsthambha* and *Udarguruta* were seen in this patient. Local examination suggests pain, swelling, crepitus, tenderness, increased local temperature of knee joint and difficulty in walking. It's grading is mentioned in table no. 3.

Case 4:

Chief complaints: A 52 years old female patient came with complaint of *Vama Janusandhishoola*, *Vama Janusandhishotha* and *Chankramankashthata* for 6 months. **History:** no history of any major disease and trauma to knee joint. **Clinical findings:** revealed *Agni* was *Manda*, *Jivha* was *Sama* and *Udarguruta* was seen in this patient. Local examination suggests pain, swelling, crepitus, tenderness, increased local temperature of knee joint and difficulty in walking. It's grading is mentioned in table no. 3.

Timeline:

Timeline is elaborated in table no. 2.

Sr.No.	Duration	Intervention	Observation
Case 1	2/12/23-6/12/23	Patient came to OPD. <i>Agnitundi vati</i> and <i>Triphala chooran</i> given for 5 days.	<i>Dakshin Janusandhishoola, Shotha Chankramankashthata, Manda agni</i> and <i>Sama Jivha</i> these sign and symptoms were seen in patient.
	7/12/23-13/12/23	<i>Dashmoolaristha</i> and <i>Panchatiktaghrita guggul</i> added along with <i>Yogabasti</i> and <i>Nirgundipatra pindasweda</i> for next 7 days.	Patient felt better. <i>Agni</i> improved. <i>Sandhishoola</i> slightly better.
	14/12/23-21/12/24	Continue the above treatment for next 8 days.	<i>Sandhishoola, Shotha</i> reduced. Pain decreased while walking. No fresh complaint. Patient is better.
	22/12/24	Advised to continue the <i>Shamana chikitsa</i> (medications) for next one month.	Patient came for follow up. Had no fresh complaints.

Case 2	5/12/23-9/12/23	Patient came to OPD. <i>Agnitundi vati</i> and <i>Triphala chooran</i> given for 5 days.	<i>Vama JanuSandhishoola, Shotha Chankramankashthata, Manda agni, Malavsthambha, Udarguruta</i> and <i>Sama Jivha</i> these sign and symptoms were seen in patient.
	10/12/23-16/12/23	<i>Dashmoolaristha</i> and <i>Panchatiktaghrita guggul</i> added along with <i>Yogabasti</i> and <i>Nirgundipatra pindasweda</i> started for 7 days.	Patient felt better. <i>Agni, Udarguruta, Malavsthambha</i> improved. <i>Sandhishoola</i> slightly better.
	17/12/23-24/12/23	Continue the above treatment for next 8 days.	<i>Sandhishoola, Shotha</i> reduced. Pain decreased while walking. No fresh complaint. Patient is better.
	25/12/23	Advised to continue the <i>Shamana chikitsa</i> (medications) for one month. .	Patient came for follow up. Had no fresh complaints.
Case 3	4/1/24-8/1/24	Patient came to OPD. <i>Agnitundi vati</i> and <i>Triphala chooran</i> given.	<i>Vama JanuSandhishoola, Shotha Chankramankashthata, Vama janu Prasarana Akunchana Apravritti, Udarguruta, Malavsthambha, Manda agni</i> and <i>Sama Jivha</i> these sign and symptoms were seen in patient.
	9/1/24-15/1/24	<i>Dashmoolaristha</i> and <i>Panchatiktaghrita guggul</i> added along with <i>Yogabasti</i> and <i>Nirgundipatra pindasweda</i> started	Patient felt better. <i>Agni, Udarguruta, Malavsthambha</i> improved. <i>Sandhishoola</i> slightly better. Movement of knee improved.
	16/1/24-23/1/24	Continue the above treatment for next 8 days.	<i>Sandhishoola, Shotha</i> reduced. Pain decreased while walking. No fresh complaint. Patient is better.
	24/1/24	Advised to continue the <i>Shamana chikitsa</i> (medications) for one month.	Patient came for follow up. Had no fresh complaints.
Case 4	10/1/24-14/1/24	Patient came to OPD. <i>Agnitundi vati</i> and <i>Triphala chooran</i> given.	<i>Vama JanuSandhishoola, Shotha Chankramankashthata, Manda agni, Sama Jivha</i> and <i>Udarguruta</i> these sign and symptoms were seen in patient.
	15/1/24-21/1/24	<i>Dashmoolaristha</i> and <i>Panchatiktaghrita guggul</i> added along with <i>Yogabasti</i> and <i>Nirgundipatra pindasweda</i> started	Patient felt better. <i>Agni, Udarguruta</i> improved. <i>Sandhishoola</i> better.

Case 4	22/1/24- 29/1/24	Continue the above treatment for next 8 days.	<i>Sandhishoola, Shotha</i> reduced. Pain decreased while walking. No fresh complaint. Patient is better.
	30/1/24	Advised to continue the <i>Shamana chikitsa</i> (medications) for one month.	Patient came for follow up. Had no fresh complaints.

Table no. 2: Timeline

Diagnostic Assessment:

The assessment of relief of sign and symptoms was done after completion of treatment by following graded subjective parameters. The grade of *Janusandhishoola*, *Janusandhishotha*, *Atopa*, *Chankramankashthata* and Tenderness were noted before and after treatment as mentioned in Table 3. Cases were evaluated according to visual analog scale (VAS) and X-ray knee joint was done.

Assessment scale -

Subjective parameters

1) Visual Analog Scale (VAS) was used for assessing pain.

Grade 0 - No pain

Grade 1 - Mild pain (exaggerated by movement and subside by rest of joint).

Grade 2 - Moderate pain (not relieved by rest but not disturbing sleep or other routine activities).

Grade 3 - Severe pain (disturbing sleep and other routine activities and relieved by analgesic).

2) Swelling

Grade 0 - No swelling

Grade 1 - Slight swelling

Grade 2 - Moderate swelling

Grade 3 - Severe swelling

3) Tenderness was evaluated on the basis of standard criteria of "Ritchie Articular Index."

Grade 0 - Normal - (Absent or no tender).

Grade 1 - Mild - (patients complains of pain with swelling at knee).

Grade 2 - Moderate - (patient complains of pain and on touch withdraw knee joint).

Grade 3 - Severe - (patient does not allow to touch the knee joint).

4) Crepitus

Grade 0 - Normal - (No crepitus)

Grade 1 - Mild - (Crepitus complained by patient but not felt on examination).

Grade 2 - Moderate - (Crepitus felt on examination).

Grade 3 - Severe - (Crepitus felt and heard on examination).

5) Walking velocity

Grade 0 - Normal - 20 min in 20 s

Grade 1 - Mild - 20 min in 30 s

Grade 2 - Moderate - 20 min in 40 s

Grade 3 - Severe - 20 min in 50 s

Therapeutic intervention:

After observing all signs and symptoms, the following treatment was advised.

For all the patients, treatment protocol was –

For initial 5 days,

Agnitundi vati 2tab BD before food and *Triphala chooran* 1 tsf HS was given, for *Deepana*, *Pachana* and *Anulomana* purpose.

Followed by, Abhyantara chikitsa (internal treatment) -

1. *Panchatiktaghrita guggul* (250mg) 2tab TDS after food.
2. *Dashmoolarishta* 20-20 ml BD after food with ½ glass of water.
3. *Agnitundi vati* 2tab BD before food.
4. *Triphala chooran* 1 tsf HS.

Bahyachikitsa (External treatment) -

1. *Nirgundipatra pindasweda* for 15 days.
2. *Yogabasti* administered for 8 days, among which 1st and 8th was *Anuwasana basti* and remaining 3 *Anuwasana* and 3 *Niruha basti* alternatively.

During treatment, all the patients are advised to take rest and proper diet according to Ayurveda to avoid *Vata* prakopa.

Follow up & outcome -

Significant results were found in all the cardinal symptoms – *Sandhishoola*, *Shotha*, tenderness and *Atopa* that was to grade 1 in 2 weeks as shown in table no 3. This study suggests that the outcome is significantly good if treatment is commenced in early stage of disease. No adverse reaction was reported in any of the patients during the entire study period and follow-up.

Sr.No.	<i>Janusandhi shoola</i>		<i>Janusandhi shotha</i>		<i>Chankram an kashtata</i>		<i>Atopa</i>		Tenderness		
	Grade	BT	AT	BT	AT	BT	AT	BT	AT	BT	AT
Case 1	3	0	3	1	2	1	2	1	2	1	
Case 2	2	0	2	0	2	1	2	1	2	1	
Case 3	3	1	2	0	2	1	2	1	2	1	
Case 4	3	1	3	1	3	1	3	1	3	1	

BT: before treatment, AT: After treatment

Table 3: Evaluation of symptom's grade before and after treatment

Discussion:

In this study, common *Hetu* (causes) of *Sandhigata vata* discovered were *Ati-ruksha* (dry food), *Ati-sheet* (cold food), and *Ati-alpa ahara* (meal in fewer quantity), *Vatavidhi* (an increase in *Vata dosha*), middle-aged women, *Diwasapna* (Daytime sleeping), cold season, *Ati vyayama* (excessive exercise). Relief in symptoms is measured from improvement in symptoms as well as from following parameters like walking time, climbing time, knee and hip joint flexion and extension.

Upon analyzing the walking duration, noticeable enhancements were observed. Significant relief was observed in the Climbing Stair Test. Pain triggered by *Vata* aggravation during stair ascent

was effectively addressed. Since *Sandhigata vata* primarily manifests as a *Vata*-dominant condition, the application of these therapies *Basti* and *Pindasweda* notably improved performance of Knee joint function.

These were OPD basis cases, administered with *Yogabasti* and *Nirgundipatra pindasweda* which is easy to use and cost-effective. Internal medication possesses *Shothahara, Rasayana, Deepana, Shoolahara* properties. This treatment helps in alleviating the sign and symptoms of *Sandhigata Vata*. No other conventional treatment was given during this. The current study provides a way for more clinical trials.

Mode of action of *Yogabasti*

Sandhigata vata is *Madhyama Margagata Vyadhi* in which *Vata* gets vitiated and accumulates in *Sandhi*. So, for treatment drug should acts on both *Vata* as well as *Sandhi*. *Basti karma* (chikitsa) is considered to be the *Ardha chikitsa* of *Vata dosha* i.e. best pacification of *Vata dosha*.⁸ *Basti* acts on *Pakwashya* which is main site of *Vata dosha*. In *Yoga Basti*, 8 *Basti* were given in total, in this procedure first *Anuwasana basti* given followed by 3 *Niruha* and 3 *Anuwasana basti* alternatively and lastly *Anuwasana basti*.⁹ *Niruha basti* was given empty stomach whereas *Anuwasana basti* was given after food. Local *Snehana* and *Swedana* administered to all patients before *Basti* procedure. *Tila Taila* (for *Anuwasana basti*) and *Dashmoola kwatha* (for *Niruha basti*) are also useful in the treatment of *Vata Vyadhi*. Hence the same drugs were chosen for present study. Purpose of *Anuwasana basti* is oleation. The *Dravya* utilized for *Basti Karma* predominantly target the *Vata dosha*, effectively regulating its activity throughout the body. According to *Acharya Charaka*, *Taila* balance the associated *Rukshata* and *Ushna guna* of *Vata* due to *Taila*'s *Snigdha guna* and *Sheet guna*. Similarly, *Acharya Sushruta* highlighted that *Snehana* nourishes the *Asthi dhatu*. *Dashmoola* is *Shothahara* (anti-inflammatory), *Vatahara* (nullifies *Vata dosha*) and *Ushna* (hot) quality so balances the vitiated *Vata dosha*. Studies also reported effect of *Dashmoola* as anti-inflammatory, analgesic, and anti-pyretic.^{10, 11}

Acharya mentioned that *Tila Taila* (sesame oil) is *Vatahara Dravya* i.e. it alleviates *Vata dosha* and decreases *Rukshata* of *Vata* due to its *Madhur rasa*, *Madhur vipaka* and *Ushna virya* and *Balya, Rasayana, Lekhana, Sushma guna* (qualities). Due to its *Vikasi* property it reduces the spasms. It also nourishes and strengthens all the *Dhatus*. Different texts mentioned *Karma* of this oil as *Brihana, Prinana, Sthariya, Balya* and *Laghutakaraka*. This oil is also rich in minerals (copper, calcium, zinc, iron). Calcium and zinc are good for bones. Copper gives relief in arthritis, gout.¹²

Nirgundipatra pindasweda

Fresh *Nirgundi* leaves were collected, followed by frying in *Tila Taila* and prepared the poultice using cotton cloth. The poultice was continuously moved and stirred in the heating *Tila Taila* until properly heated, after which it was taken out of the vessel. Before application of poultice, medicated oil was massaged onto the knee joint, followed by the circular application of the warmed *Nirgundi* poultice. This process lasted

for approximately 30 minutes, completing the *Nirgundipatra pindasweda* procedure.¹³

Nirgundi has *Katu, Tikta rasa, Ushana Virya, Katu Vipaka*, and *Laghu, Ruksha Guna* properties, which pacifies *Vata-kapha*. It has analgesic, anti-inflammatory, antispasmodic and anti-arthritis quality. In this process, we used *Taila*, which has *Ushna Virya* hence acts as *Shoolahara*. *Snigdha guna* of *Taila* hampers *Rukshata* of *Vata*. Also, oil soothes the joints and increased mobility of joints. *Nirgundipatra pindasweda* serves as a lipoid medium for penetration of drug molecules, as lipid medium is suitable for absorption of the drug molecule through skin. Hence it reduces pain and also acts as anti-inflammatory.¹⁴

¹⁵

Dashmoolaristha

Dashmoola is *Tridoshahara Dravya* mainly acts on *Vata* and *Kapha dosha*. It has *Amahara, Sthothara, Deepana* and *Rasayana* effect.¹⁶ Hence in this it pacifies *Vata dosha*, helps in *Anulomana* of *Vata dosha* hence acts as analgesic as well as anti-inflammatory. *Dashmoolaristha* acts as antioxidant, antifatigue and immunostimulatory agent.^{17,18} *Dashmoolaristha* in daily usage increases the strength and stamina.

Panchatiktaghrita Guggul

According to Ayurveda, *Tikta rasa Dravya* prefer in *Asthi dhatu* dushthi. *Panchatiktaghrita guggul* has dominance of *Tikta rasa* in it. *Tikta rasa* has affinity towards *Asthi dhatu* because of *Vayu* and *Akasha mahabhuta pradhanta* (dominance). It also increases the *DhatvAgni* (metabolic stage) and increases nutrition to all *Dhatus* hence slows down the process of degeneration. *Tikta rasa* helps in reducing the weight ultimately obesity due to *Lekhana* property. *Tikta rasa* is also act as anti-inflammatory agent and hence reduces the pain and swelling of the joints. *Ghrita* has *Vata-Pittashamaka, Balya, Agnivardhaka, Madhura, Saumya, and Sheeta Virya, Shoolahara, Jwarhara, Vrishya* and *Vayasthapaka* properties. *Ghrita* has *Yogavahi* property so other drug also acts efficiently. It is a good source of vit. D, good for bone health. Hence, it is helpful in the *Samprapti vighatana* of the *Sandhigata Vata*.^{19,20}

Agnitundi Vati (Rasa)

All the contents of *Agnitundi vati* are mostly *Tikshna, Ushna* in nature which sculpt the *Deepana, Pachana, Vatashamana* and *Shoolahara* effect. In the *Samprapti* of *Sandhigata Vata, Mandagni* plays a major role, which is due to accumulation of *Aama*.²¹ By digesting *Aama*, *Agnitundi rasa* conquest *Agnimandya* and helped to improve *Agni*. *Vata* resides in body in different places but mainly *Pakwashya*. The action of *Agnitundi Rasa* is mainly on *Aamashaya* and *Pakwashya*, hence helps in balancing the vitiated *Apama* and *Vyana vayu*. Hence subsides the symptoms and relieved from swelling and pain.²²

Triphala Chooran

Triphala has shown promise as an anti-inflammatory agent. It possesses anti-inflammatory, analgesic and anti-arthritis properties. *Triphala chooran* is good rejuvenator, hair tonic, purgative and good for digestion.²³

Declaration of patient consent – written informed consent was obtained from the patient for publication of this case reports.

Financial support and sponsorship - Nil.

Conflicts of interest -

There are no conflicts of interest.

REFERENCES

- Goodman S. Osteoarthritis. In: Yee A, Paget S, eds. Expert Guide to Rheumatology. Philadelphia, Pa.: American College of Physicians; 2005:269–283.
- <https://www.who.int/news-room/fact-sheets/detail/osteoarthritis>
- DiCesare PE, Abramson S, Samuels J. Pathogenesis of osteoarthritis. In: Firestein GS, Kelley WN, eds. Kelley's Textbook of Rheumatology. 8th ed. Philadelphia, Pa.: Saunders Elsevier; 2009.
- Charak Acharya Vidhyadhar Shukla, Ravidutt Tripathi, Caraka, Caraka Samhita, Delhi: chaukhamba Sanskrit pratishtan; 2017, Chikitsasthana 28, Vatavyadhi chikitsa,37; p. 694.
- Shastri K, editor. Nidhanasthana; Vatavyadhinidan Adhyaya. Verse 29. In: Sushruta, Sushruta Samhita. Varanasi, India: Chaukhamba Sanskrit Sansthan; 2012. p. 460.
- Madhavanidanam of sri Madhavakara with madhukosa Sanskrit commentary sri sudarsana sastri,editor- Yadunandana Upadhyaya,Chaukhamba Prakashan,Varanasi, edition 2021,chapter 22,vatavyadhinidanam,shlock 21,page no 463.
- Charak chikitsa Charak Acharya Vidhyadhar Shukla, Ravidutt Tripathi, Caraka, Caraka Samhita, Delhi: chaukhamba Sanskrit pratishtan; 2017. Chikitsasthana 28, Vatavyadhi chikitsa,37; p. 694. Kaviraj Atrideva Gupta, Astangahrdayam, 3rd edition, Chaukhamba prakashan, Varanasi, Chapter 19, 87, 171.
- Vagbhata. Arunadatta, Hemadri. Astanga Hridaya. Basti Vidhi Adhyaya. 10th edition. Varanasi: Chaukhamba Orientalia; 2011. Vol 1 p. 286
- Rathod, D., & Dattani, K. (2017). Effect of Yoga Basti in Sandhivata w.s.r. to Osteoarthritis of Knee joint. International Journal of Ayurvedic Medicine, 8(2). <https://doi.org/10.47552/ijam.v8i2.929>
- Gopal C Nanda1*, R K Tiwari2ayushdhara, Shothahara Activities Of Dashamoola Dravyas As An Anti Inflammatory Formulation With Special Reference To Charak- A Review | January - February 2016 | Vol 3 | Issue 1, 479-485.
- Dawane Js, Pandit V, Borole K. Experimental Evaluation Of Antipyretic Activity Of Aqueous Extract Of Dashamula. Spatula Dd, 2012; 2(1): 17- 21
- Dr. Pravin Jawanjal, TILA TAILA A REVIEW, WORLD JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH, 2018,4(10), 76-78.
- Joshi A, Mehta CS, Dave AR, Shukla VD. Clinical effect of Nirgundi Patra pinda sweda and Ashwagandhadi Guggulu Yoga in the management of Sandhigata vata (Osteoarthritis). Ayu. 2011;32(2):207-212. doi:10.4103/0974-8520.92588
- Bhavamishra. Bhavaprakasha Nighantu - Hindi Commentary by K.C. Chunekar,1sted. Varanasi: Published by Chaukhumbha Bharathi Academy; 2002, pg-984Joshi A, Mehta CS, Dave AR, Shukla VD. Clinical effect of Nirgundi Patra pinda sweda and Ashwagandhadi Guggulu Yoga in the management of Sandhigata vata (Osteoarthritis). Ayu. 2011;32(2):207-212. doi:10.4103/0974-8520.92588
- Taru, Poonam & Syed, Sabeena & Kute, Pournima & Shikalgar, Malan & Kad, Dhanshree & Gadakh, Archana. (2022). DASHAMOOLA: A SYSTEMATIC OVERVIEW. GIS-Zeitschrift fü Geoinformatik. 9. 1334-1345.
- gupta, Arun & Madaan, Alka & Srivastava, Ruchi & Kumar, Satyendra & Sastry, Jln. (2018). Evaluation of antioxidant, immunostimulatory and antifatigue properties of Dashmularishta using in vitro and in vivo assays. Indian journal of experimental biology. 56. 598-603.
- Shetty, Y., Godbharle, S., Brahma, S., Salgaonkar, S. & Rege, N. (2017). Evaluation of oral multi-herbal preparation of Dashmoolarishta on mice model of osteoarthritis. Journal of Basic and Clinical Physiology and Pharmacology, 28(6), 583-591. <https://doi.org/10.1515/jbcpp-2016-0141>
- Akhtar, Babul M.D. (Ayu.)*;; Mahto, Raja Ram**; Dave, A. R.***; Shukla, V. D.****. Clinical study on Sandhigata vata w.s.r. to Osteoarthritis and its management by Panchatikta ghrita guggulu. AYU (An International Quarterly Journal of Research in Ayurveda) 31(1): p 53-57, Jan–Mar 2010. | DOI: 10.4103/0974-8520.68210
- Shivananda B Karigar: Classical Utility Of Panchatikta Guggulu Ghrita In Its Indications- Literary Review. International Ayurvedic Medical Journal {online} 2021 {cited June, 2021}
- Vd. Yogita A. Surpam and Vd. R. M. Khiyani (2021) critical review and probable mode of action of agnitudi rasa – a herbomineral formulation. World Journal of Pharmaceutical Research. Volume 10, Issue 9, 625-637. DOI: 10.20959/wjpr20219-21126.
- Nandurkar, Diksha & Chavhan, Kalpana. (2024). A conceptual review on the efficacy of Agnitudi Vati in the management of Gridhrasi w.s.r. to Sciatica. Journal of Ayurveda and Integrated Medical Sciences. 9. 113-116. 10.21760/jaims.9.2.17.
- Chouhan, Bali & Kumawat, Ramesh & Kotecha, Mita & Ramamurthy, A & Nathani, Sumit. (2013). Triphala: A comprehensive ayurvedic review. International journal of Research in Ayurveda & Pharmacy. 4. 612-617. 10.7897/2277-4343.04433.